



Testimony of

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On

Decimal Pricing and

HR 1053, The Common Cents Stock Pricing Act of 1997

Before the

Subcommittee on Finance and Hazardous Materials

Of the

House Commerce Committee

April 16, 1997

I am pleased to present the preliminary views of the NASD on the issue of decimalization in general, and HR 1053, the Common Cents Stock Pricing Act of 1997 in particular. HR 1053 requires the SEC to promulgate, within one year of enactment, a rule that requires the quotation of equity securities in dollars and cents, and permits the SEC to set the implementation schedule.

The NASD position is clear: if decimalization is demonstrated to be in the best interests of investors, we support its implementation. As will be described in more detail later, several factors combine to highlight the NASD's favorable stance toward quote increment liberalization. For example,

- Unlike other U.S. equity markets, trading (but not quoting) in all Nasdaq stocks can take place in any increment, including decimal increments.
- Last December, Nasdaq's Quality of Markets Committee, composed primarily of industry professionals, voted in favor of 16ths quoting in all Nasdaq stocks, and the initiation of a study of decimalization.
- The Nasdaq and NASD Boards recently voted to move to 16ths quoting.
- In response to your initiative, the NASD staff has accelerated its analysis of the costs and benefits of a shift to decimalization. Despite our favorable disposition, the NASD believes that the decision to

decimalize should be made with great care and with full awareness of the other priorities that will be displaced. We recommend that the changes that HR 1053 proposes not be mandated unless the evidence demonstrates that it will, indeed, be in the best interests of investors.

- The Nasdaq Stock Market is, concurrently, moving toward the technological capability to quote in decimals for all Nasdaq stocks, to be prepared should decimal quoting prove to be in investors interests.

NASD

Established under authority granted by the 1938 Maloney Act Amendments to the Securities Exchange Act of 1934, the National Association of Securities Dealers (NASD) is the largest self-regulatory organization for the securities industry in the United States. Every broker/dealer that does a securities business with the public is required by law to be a member of the NASD.

The NASD's membership comprises more than 5,500 securities firms which operate in excess of 60,000 branch offices, and have in their employ more than 535,000 registered securities professionals.

In 1996, the NASD became the first securities-industry self-regulatory organization to formally separate its regulatory functions from its market

operations and to adopt a governing Board structure that requires a majority of governors from outside the securities industry.

The NASD is the parent company of NASD Regulation, Inc., (NASDR), and The Nasdaq Stock Market, Inc. These wholly-owned subsidiaries operate under delegated authority from the parent, which retains overall responsibility for ensuring that the organization's statutory and self-regulatory obligations and functions are fulfilled.

NASD Regulation

The NASDR mission is to protect investors and strengthen market integrity. In carrying out its mission, NASDR fulfills a substantial portion of the parent organization's responsibilities as the securities industry's primary self-regulator. It regulates both the broker/dealer profession and the markets operated by its sister subsidiary, The Nasdaq Stock Market, Inc.

NASDR carries out its examination, disciplinary, and other regulatory responsibilities from its Washington headquarters and 14 District Offices located in major cities throughout the country. A committee of the NASDR Board of Directors, the National Business Conduct Committee, reviews as an appellate body the organization's disciplinary activities, and seeks, to the extent possible, uniformity in disciplinary actions. Final NASD disciplinary actions can be appealed to the SEC and then to the United States Courts of Appeals.

The Nasdaq Stock Market

In keeping with the NASD's mission of facilitating capital formation for the ultimate benefit of investors, the Nasdaq Stock Market develops and operates a variety of market systems and services.

The Nasdaq Stock Market is the largest electronic, screen-based market in the world, capable of handling trading levels of at least one billion shares a day. Founded in 1971, Nasdaq today accounts for more than one-half of all equity shares traded in the nation and is the second largest stock market in the world in terms of the dollar value of trading. It lists the securities of 5,553 domestic and foreign companies, more than all other U.S. stock markets combined.

Major changes are now underway in the Nasdaq market, which is in the process of implementing the SEC's new Order Handling Rules. The experience to date has been a substantial reduction in spreads of about one third.

Nasdaq and Minimum Trading Increments

Some aspects of the Nasdaq market are particularly relevant to the issue of minimum trading increments. Nasdaq does not have an exchange's physical trading floor, but is a large telecommunications network that links securities firms electronically. The network is used to disseminate quotes, route orders, and report trading activity. In a sense, then, Nasdaq is a web that links geographically disperse trading centers, or a market of markets.

The structure of Nasdaq is substantially less regimented and formal than that of exchanges. This aspect of Nasdaq is relevant to the decimalization issue. For example, in contrast to the exchanges, Nasdaq participants may trade at any price on which they agree. The price may be reported down to $1/256^{\text{th}}$ of a dollar (which is about four tenths of a cent), or in decimal format with eight available places to the right of the decimal, although prices on the tape are displayed in fractions. Most traders do not avail themselves of this level of precision, but they have the opportunity to do so.

Like the exchanges, however, Nasdaq does impose restrictions on the quotes posted by market makers. Although, as described below, we have recently decided to change it, when a market maker's bid exceeds \$10, its quotes must today be in eighths of a dollar. When the bid is below \$10, quotes may be expressed in 32nds of a dollar.

An important part of Nasdaq, especially since the recent implementation of the SEC's new Order Handling Rules, are Electronic Communications Networks, or ECNs. ECNs are non-telephonic systems by which traders can route orders to trade among themselves. The most widely used ECN on Nasdaq, the privately-owned Instinet, allows orders to be placed in 64ths of a dollar, about one and a half cents. Nasdaq itself provides an ECN, SelectNet, which allows display of prices down to $1/256^{\text{th}}$ of a dollar (about four tenths of a cent).

Recent Proposals on 1/16s and Decimals

The NASD has recently put into motion a plan that will cut the minimum quotation increment in half. Our Quality of Markets Committee considered quote liberalization at its meeting last December. The Nasdaq Board on March 25, 1997 voted to support minimum quotation increments of $1/16^{\text{th}}$ of a dollar for Nasdaq securities over \$10. The NASD Board met on April 10, 1997 and approved the proposal and it will be submitted to the SEC shortly. The SEC must approve any changes before they can be made effective.

Thus, by halving the minimum increment of 12.5 cents ($1/8^{\text{th}}$) to 6.25 cents ($1/16^{\text{th}}$), one of the major goals of decimalization — to reduce the trading increment restriction — has been addressed by the NASD Board.

In addition, Nasdaq is in the process of upgrading its systems, with an integral part of that upgrade being the capability for market participants to post quotations in decimal format.

The NASD is not alone in these actions. On March 13, 1997, the American Stock Exchange's Board of Governors approved a proposal to adopt minimum trading increments of $1/16^{\text{th}}$ of a dollar for all of its listed stocks. Trading in $1/16^{\text{th}}$ for stocks at \$10 or higher will begin within two weeks of the Exchange receiving the required SEC approval.

Benefits of Decimalization

The three major benefits from decimalization that proponents advance are (1) plainly understood numbers, (2) savings for investors, and (3) international competition for U.S. markets.

First, the clearest and least disputed benefit of decimal pricing is that the decimal numbering system is easier for investors to understand. Given recent efforts in the securities and other industries to simplify information that a consumer needs to make informed decisions, we see this benefit as a mathematical equivalent to Plain English securities disclosure.

Proponents of decimalization state that it will allow freer price competition, with the expectation that it will reduce spreads. From this analysis proponents state that billions of dollars of savings are projected, based on an estimate that every one-cent decrease in spreads would equate to a \$1 billion savings to investors.¹

In addition to benefits to investors from narrowed spreads, proponents of decimalization state that U.S. markets need to decimalize to be competitive with

¹ Wallman, Steven M. H., "Technology and our Markets: Time to Decimalize," Speech delivered at Pace University, September 25, 1996. See also Peake, Junius W., "Brother can you spare a dime? Let's Decimalize the U.S. Equity Markets!" Published in *Global Equity Markets: Technological, Competitive, and Regulatory Challenges*, Robert A. Schwartz, Editor; Irwin: Chicago, 1995, p. 302-339.

other world exchanges, which already trade in decimals, especially for those foreign securities traded on U.S. exchanges that are priced in foreign currencies.

Costs

As with any major change to financial markets, there are potential costs that must be weighed in deciding whether the change is, on balance, beneficial and timely. Our analysis does not consider the direct costs of implementation by other market participants, such as broker/dealers and data vendors, which we believe will be significantly larger than our direct costs.

NASD Costs

Both the Nasdaq Stock Market and NASDR operate a number of systems that have to be changed to use decimals in lieu of fractions; these changes incur direct monetary costs. However, these automation costs are less significant than the costs that would be borne if other, top priority NASD initiatives have to be postponed to a lower priority in order to accelerate decimalization, to the detriment of the market and the investing public. Two projects are especially critical:

- **Year 2000** - The Year 2000 project at the NASD, as elsewhere, involves a massive review of current software to assure that it will be able to function when the date changes to the year 2000. Older systems in particular – which are often important parts of current systems – were

not written with the expectation that they would be functioning at the end of the century, and thus often had only two digits to account for the year. Accounting for all four digits of the year at the turn of the century could cause those systems to fail, with dire consequences. The NASD is planning to have these changes made by 1998; earlier implementation of decimalization may interfere with that schedule. Moreover, we believe that mixing of Year 2000 efforts with any other project, such as decimalization, adds significant risk to the success of Year 2000.

- **Changes to Nasdaq's Market Structure** - The SEC's order handling rules are now being implemented on a phased-in basis, and are not scheduled to be fully implemented until late 1997. Through diverting systems development resources from other projects, the early implementation of these rules has been accelerated to twice the normal rate. As mentioned earlier, in the early phases of the implementation of these rules inside spreads have declined by about a third, a significant savings to investors. The phase-in will be followed by other planned market enhancements such as an integrated order delivery and execution system.

Other Market Costs and Considerations

In addition to the costs that decimalization present to the NASD's operations are other less direct costs and concerns that should be evaluated. The academic literature has identified a number of potential general concerns about decimalization, including those involving plain numbers and liquidity supply.

With regard to plain numbers, critics note that it is primarily market professionals who need to understand the current fractional pricing system. They should be comfortable with the current system. Account statements received by retail investors can, and usually are, converted to decimal numbers. These provide the information that investors typically need to make informed investment decisions without unnecessary complexity.

In our review of the existing literature on decimalization issues, we find that many of the issues regarding the other reason to decimalize – to reduce the size of the tick – are more complex than is perhaps commonly thought. We find reasonable arguments that establish benefits to an institutionally established minimum price variation. These benefits include a more orderly trading environment that minimizes the time needed for negotiation of prices, minimizes

reporting errors, and ensures that as traders bid against each other, they move in price increments that are economically significant.²

Experience of Other Exchanges

The experience of other exchanges with decimals can shed some light on the potential decimalization of the US securities markets, but it is not yet clear what that experience demonstrates.

The most frequently cited example on the benefits of decimalization involves the experience of the Toronto Stock Exchange. That exchange moved in April 1996 to a decimal-based minimum increment, reducing it from 1/8 of a dollar (12.5 cents) to 1/20th of a dollar (5 cents) for stocks priced over \$5. Preliminary analysis shows that the change caused a reduction in spreads, but quotation depth (a measure of the number of shares that can be executed at a quotation) declined as well.³ It is, therefore, not certain whether overall market

² See Grossman, Sanford J. and Merton H. Miller, "Liquidity and Market Structure," *The Journal of Finance*, Vol. 43, No. 3 (July 1988) pp 617- 633; Angel, James J., "Tick Size, Share Prices, and Stock Splits," forthcoming in *The Journal of Finance*, (Feb 1996); Harris, Lawrence, "Does a Large Minimum Price Variation Encourage Order Exposure?" Working Paper, Marshall School of Business at USC, (Oct 1996).

³ See Bacidore, Jeffrey M., "The Impact of Decimalization on Market Quality: An Empirical Investigation of the Toronto Stock Exchange," Working paper, Indiana University, (Feb 1997); Weaver, Daniel G., "Decimalization and Market Quality," Working paper, Marquette University, (March 1997); Ahn, Heejoon, Charles Cao, and Hyuk Choe, "Decimalization and Competition Among Exchanges: Evidence from the Toronto Stock Exchange Cross-Listed Securities," Working paper, Pennsylvania State University, (Jan. 1997).

quality increased. As of a few months after the change, there had been no increase in trading volume on the TSE, nor had the TSE gained market share for those stocks that are cross-listed on U.S. stock markets, nor had there been an appreciable change in dealer profits.

In 1992, the American Stock Exchange reduced the minimum increment for stocks priced under \$5 from 1/8 to 1/16. One study found that this change reduced spreads for most of the affected stocks, especially those with lower prices and higher trading activity. Although caution is needed when considering the implications for other market situations based on such relatively low priced stocks, researchers have found that average specialist quoted depth remained unchanged, suggesting that market quality was improved as a result of the change.⁴

Futures and options exchanges provide an example of practical policymaking regarding the minimum increment. Unlike equity markets, derivatives exchanges revise the minimum increment more frequently. We believe that insight can be gained by studying this process and its effects on market quality.

⁴ Ahn, Heejoon, Charles Cao, and Hyuk Choe, "Tick Size, Spread, and Volume," *Journal of Financial Intermediation*, Vol. 5 (1996) pp. 2-22

NASD Study Plan

We believe that the benefits, costs, and considerations discussed above continue to present important questions that should be addressed before any changes to market pricing are mandated. We have therefore undertaken a comprehensive analysis of the effects of decimalization, which will comprise the following parts:

- A review and interpretation of the relevant literature, especially academic research.
- A study of other markets that have had experience with decimals. Such markets include foreign markets as well as domestic futures and options exchanges.
- An analysis of the current trading environment on Nasdaq and Nasdaq related trading systems, including third market trading of exchange listed stocks and the OTC Bulletin Board. Although caution is needed when considering the implications for other market situations based on such relatively low priced stocks, the OTC Bulletin Board is a market characterized by virtually no restrictions on quotations or trade prices and uses both decimal and fractional pricing. We will also look especially at the major changes to Nasdaq that have great potential for reducing spreads such as the SEC order execution and handling rules,

and the use of 1/16ths as the minimum increment for stocks with bids greater than \$10.

A recent example shows the distribution of these trade prices. During the week of March 31- April 4, 1997, 1.9 million trades were reported on Nasdaq. For 14% of these trades, the *trade prices* were in increments finer than an eighth. Looking at trades where the stock price exceeded \$10 (and thus the *quotes* were expressed in eighths), 9% of the trade prices were in increments finer than an eighth. Smaller than eighths usage is especially high on OTC Bulletin Board trades, where more than half of the trade prices were in increments finer than an eighth.

Our preliminary research shows that trading in finer increments than an eighth tends to be more prevalent on Nasdaq when:

- the trade is done on Instinet or SelectNet,
- the stock price is lower,
- the stock is more actively traded, and
- the stock price is less volatile.

We estimate that our study will take approximately six months to complete. We will, of course, present our findings to the Subcommittee.

Conclusion

In conclusion, despite our favorable stance toward quote increment liberalization, we urge that Congress proceed with caution. The current system has been notably successful over many years. Further, the business of stock markets is quite competitive — Nasdaq competes for listings with the two major U. S. exchanges, as well as with a number of foreign exchanges, so that markets have incentives to better meet investor needs without government intervention. Finally, since decimalization will take some effort to accomplish, it must be measured against other priorities that we must balance in improving and safeguarding our markets, such as the SEC's order handling rules and the Year 2000 review.

As I said before, we are engaged in a study of decimalization. The issues are more complex than is often thought; we project that our study will be completed in about six months. We will, of course, share the results of this study and the NASD's plans regarding decimalization with the subcommittee, and we recommend that the changes proposed by HR 1053 not be mandated unless the evidence on decimalization demonstrates that it will, indeed, be in the best interests of investors.

We share the desire of Congress to improve the equity markets of this country. If the current system is found to be an impediment to the efficiency and

fairness of stock trading, then of course it should be reformed. Or, if we find the benefits to investors can be materially improved, we will endorse a decimal system and implement it in the Nasdaq Stock Market. Our judgment will be driven by what is in the best interests of the investor community.



Summary of Testimony

Dean Furbush, Chief Economist

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Dean Furbush began as NASD's Chief Economist in June 1995. Prior to joining the NASD Mr. Furbush had been Senior Economist at Economists Incorporated for five years.

He was Economic Advisor to the Chairman, Commodity Futures Trading Commission, from October 1989 to August 1990 and Financial Economist at the Securities and Exchange Commission, Office of Economic Analysis, from June 1987 to October 1989. From June 1985 to September 1986, and again in January 1987, Mr. Furbush was a consultant and economist in the Executive Office of the President, Council of Economics Advisers.

He has been Adjunct Professor at Virginia Polytechnic Institute and State University, Department of Economics and MBA Program since September 1990. During the 1968-87 academic year he was Adjunct Instructor in the Department of Economics at the University of Maryland.

Mr. Furbush received a B. A. degree in economics from the University of Washington, and M. A. and Ph.D. degrees in economics from the University of Maryland.

Mr. Furbush is the author or co-author of numerous articles appearing in the *Journal of Applied Corporate Finance*, *The Business Lawyer*, *Fortune Encyclopedia of Economics* (Warner Books), *Regulation*, the *Wall Street Journal*, the *Cornell Law Review*, *Financial Management*, *Economic Report to the President*, *Global Custodian*, and *Butterworth's Journal of International Banking and Financial Law*.